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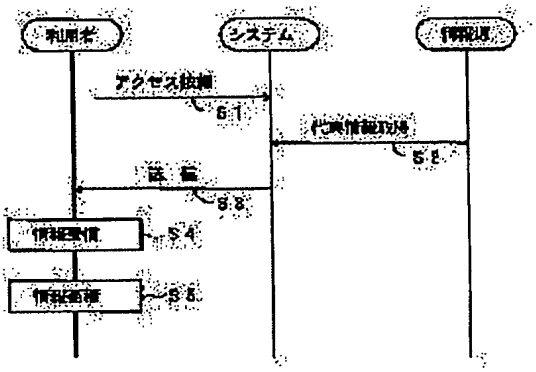
(54) METHOD FOR OBTAINING SUBSTITUTE INFORMATION AND SYSTEM THEREFOR AND STORAGE MEDIUM FOR STORING SUBSTITUTE INFORMATION OBTAINING PROGRAM

(57)Abstract:
PROBLEM TO BE SOLVED: To reduce various costs to be paid by a user, and to suppress an access load to be imposed on an information source.
SOLUTION: Periodic access is requested to a system existing on a network instead of direct access from a user through the network to an information source whose data are periodically updated. Then, the system obtains information by periodically performing access to the information source, and transmits it to the user. The information is obtained from the system and stored at the user's side.



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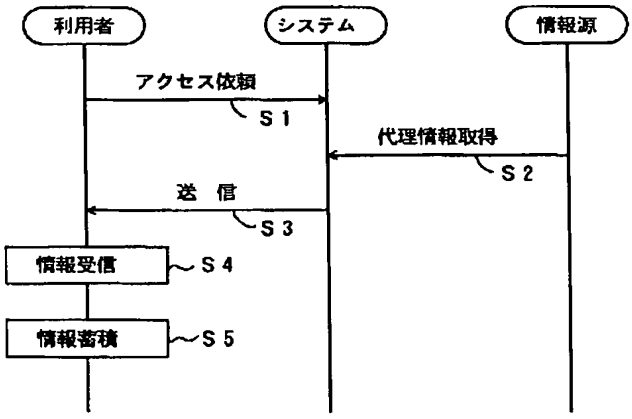
(54)【発明の名称】　代理情報取得方法及びシステム及び代理情報取得プログラムを格納した記憶媒体

(57)【要約】

【課題】　利用者が負うべき様々なコストを押さえることができ、情報源が被るアクセス負荷を抑制することが可能な代理情報取得方法及びシステム及び代理情報取得プログラムを格納した記憶媒体を提供する。

【解決手段】　本発明は、定期的にデータ更新する情報源に、利用者がネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在するシステムに定期的なアクセスを依頼し、システムが定期的に情報源にアクセスして情報を取得し、利用者に送信し、利用者側においてシステムから情報を取得して、蓄積する。

本発明の原理を説明するための図



【特許請求の範囲】
【請求項１】　利用者が定期的に更新される情報源にアクセスして取得するための代理情報取得方法において、
定期的にデータ更新する情報源に、利用者がネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在するシステムに定期的なアクセスを依頼し、
前記システムが定期的に前記情報源にアクセスして情報を取得し、前記利用者に送信し、
前記利用者側において前記システムから情報を取得して、蓄積することを特徴とする代理情報取得方法。
【請求項２】　前記システムへの複数の利用者からの依頼条件のうち重複するものを検出し、処理を最適化する請求項１記載の代理情報取得方法。
【請求項３】　前記システムにおいて、定期的に前記情報源にアクセスして取得した情報が、更新されていた場合のみ保存する請求項１記載の代理情報取得方法。
【請求項４】　前記情報源から取得した情報を、参照元がなくなった段階で消去する請求項１記載の代理情報取得方法。
【請求項５】　前記情報源から取得した情報を転送する際に、無限ループを検出する請求項１記載の代理情報取得方法。
【請求項６】　利用者からの依頼により定期的に更新される情報源を有する情報提供装置にアクセスして取得するための代理情報取得システムであって、
定期的にデータ更新する前記情報提供装置に、利用者がネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在する前記情報提供装置への定期的なアクセスを依頼し、取得した情報を蓄積する利用者端末と、
前記利用者端末からの依頼に基づいて前記情報提供装置に定期的にアクセスするアクセス手段と、該依頼に対応する情報を前記情報提供装置から取得する情報取得手段と、該情報取得手段により取得した情報を該利用者端末に転送する転送手段とを有する代理情報取得装置とを有することを特徴とする代理情報取得システム。
【請求項７】　前記代理情報取得装置は、
複数の利用者端末からの依頼条件のうち重複するものを検出し、処理を最適化する重複条件検出手段を含む請求項６記載の代理情報取得システム。
【請求項８】　前記代理情報取得装置は、
定期的に前記情報提供装置にアクセスして取得した情報が、更新されていた場合のみ保存する更新判定手段を含む請求項６記載の代理情報取得システム。
【請求項９】　前記代理情報取得装置は、
前記情報提供装置から取得した情報を、参照元がなくなった段階で消去する情報削除手段を含む請求項６記載の代理情報取得システム。
【請求項１０】　前記情報提供装置から取得した情報を前記利用者端末に転送する際に、転送命令の実行による無限ループを検出する無限ループ検出手段を含む請求項６記載の代理情報取得システム。
【請求項１１】　利用者が定期的に更新される情報源にアクセスして取得するための代理情報取得プログラムを格納した記憶媒体であって、
定期的にデータ更新する情報源に、利用者がネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在するシステムに定期的なアクセスを依頼するアクセス依頼プロセスと、
前記アクセス依頼プロセスによる依頼に基づいて前記利用者に代わって、前記情報源にアクセスする代理アクセスプロセスと、
前記代理アクセスプロセスにより取得した情報を前記利用者側に送信させる情報送信プロセスと、
前記情報送信プロセスにより取得した情報を蓄積させる蓄積プロセスとを有することを特徴とする代理情報取得プログラムを格納した記憶媒体。
【請求項１２】　前記システムへの複数の利用者からの依頼条件のうち重複するものを検出し、処理を最適化する最適化プロセスを含む請求項１１記載の代理情報取得プログラムを格納した記憶媒体。
【請求項１３】　定期的に前記情報源にアクセスして取得した情報が、更新されていた場合のみ保存させる更新判定プロセスを含む請求項１１記載の代理情報取得プログラムを格納した記憶媒体。
【請求項１４】　前記情報源から取得した情報を、参照元がなくなった段階で消去する情報消去プロセスを含む請求項１１記載の代理情報取得プログラムを格納した記憶媒体。
【請求項１５】　前記情報源から取得した情報を転送する際に、無限ループを検出する無限ループ検出プロセスを含む請求項１１記載の代理情報取得プログラムを格納した記憶媒体。
【発明の詳細な説明】
【０００１】
【発明の属する技術分野】本発明は、代理情報取得方法及びシステム及び代理情報取得プログラムを格納した記憶媒体に係り、特に、利用者が定期的に更新される情報にアクセスし、情報を取得する作業を、利用者に代わり、ネットワーク上の代理システムに行わせるための代理情報取得方法及びシステム及び代理情報取得プログラムを格納した記憶媒体に関する。
【０００２】
【従来の技術】図１１は、従来の利用者毎にネットワークを介して情報提供装置にアクセスする形態を示す。同図に示す構成は、各々の利用者端末毎にネットワークを介して直接情報提供装置にアクセスすることにより、これにより、情報提供装置において更新された情報を取得する。
【０００３】（１）　定期的に更新される情報は、利用

者が端末から更新周期に合わせて情報提供装置にアクセスし、取得している。最近では、予めアクセス先とアクセス時間、周期を設定しておけば、自動的にアクセスする端末ソフトも販売されている。

（２）　防火壁を設置しているネットワークにおいては、プロキシサーバのキャッシュ機能を利用し、情報取得のアクセス速度の向上及び情報源のアクセス負荷の軽減を図っている。

【０００４】

【発明が解決しようとする課題】しかしながら、上記従来の（１）の方法では、情報源へのアクセスは、現状では、利用者毎に行う場合が殆どである。従って、定期的に更新される情報源の情報を、利用者が端末から手動で取得しようとすると当然ながら、常時端末とネットワークを稼働させ、情報の更新の周期に合わせ情報を監視しなければならない。情報監視の労を軽減するため、設定した情報源に自動的にアクセスするソフトウェアも最近では開発されているが、この場合でも、常時端末を稼働させ、ネットワークを接続した状態にしておかなければならないため、これらのコストはやはりかかる。

【０００５】また、情報源の立場からも利用者毎にアクセスしてくるという状況は、アクセス頻度の高い情報源に、非常に高いアクセス負荷をもたらす。そのため、利用者側は、ますます情報を取得するのに時間がかかり、ネットワークのコストが高くつくだけでなく、情報を取得できなくなる場合もある。また、上記従来の（２）の方法では、プロキシサーバのキャッシュ機能は、あくまでアクセスした情報を一時的に蓄積し、ある一定量を越えたら古いものから消去していく機能しかなく、個々の情報の管理まで行ってはいない。一般のプロキシサーバのキャッシュ機能は、情報源の情報が更新／未更新のチェックまでは行わないので、キャッシュに蓄積された情報が、すでに古くなってしまっている可能性もある。よって、利用者はキャッシュに溜まっている情報を信用することができないため、キャッシュをクリアし、再度情報源にアクセスするような命令を端末から送らなければならず、結局は、各利用者が情報源に直接アクセスすることになる。このように頻繁に更新される情報源に対しては、キャッシュの効果は少ない。

【０００６】また、キャッシュは、一時的な共有機能であるが、本来、共有情報は、その情報を必要としている利用者がいる限り削除することは望ましくない。上述したように、プロキシサーバのキャッシュ機能は、個々の蓄積情報を管理していないため、まだ、情報を必要としている利用者がいるにも関わらず消去してしまうということが起こり得る。

【０００７】情報源にアクセスした結果、その情報に転送情報（例えば、ＨＴＭＬにおける、＜ＭＥＴＡＨＴＴＰ－ＥＱＵＩＶ＝"REFRESH" ＣＯＮＴＥＮＴ＝" ０，ＵＲＬ＝転送先　ＵＲＬ" など）が示されているものもある。昨今のＷＷＷブラウザにおいては、転送先が示されている情報を得た場合には、直ちに転送先のアドレスにアクセス先を変え、情報を取得するような仕様となっているが、転送先の情報に更に転送情報が示されて、その転送先が転送元を示している場合もある。このような場合には、転送のループを構成してしまい、永遠に交互にアクセスし続けることになる。ＷＷＷブラウザから手動でアクセスしている場合には、このような現象が起きても、意図的にアクセスを停止させ、ループを切ることができるが、自動アクセスさせる場合には、システムにこのようなループの検知機能がなければ問題となる。

【０００８】本発明は、上記の点に鑑みなされたもので、利用者が負うべき様々なコストを押さえることができ、情報源が被るアクセス負荷を抑制することが可能な代理情報取得方法及びシステム及び代理情報取得プログラムを格納した記憶媒体を提供することを目的とする。

【０００９】

【課題を解決するための手段】図１は、本発明の原理を説明するための図である。第１の発明は、利用者が定期的に更新される情報源にアクセスして取得するための代理情報取得方法において、定期的にデータ更新する情報源に、利用者がネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在するシステムに定期的なアクセスを依頼し（ステップ１）、システムが情報源に定期的にアクセスして、情報を取得して（ステップ２）、利用者側に送信し（ステップ３）、利用者側においてシステムから情報を取得して（ステップ４）、蓄積する（ステップ５）。

【００１０】第２の発明は、システムへの複数の利用者からの依頼条件のうち重複するものを検出し、処理を最適化する。第３の発明は、システムにおいて、定期的に情報源にアクセスして取得した情報が、更新されていた場合のみ保存する。第４の発明は、情報源から取得した情報を、参照元がなくなった段階で消去する。

【００１１】第５の発明は、情報源から取得した情報を転送する際に、無限ループを検出する。図２は、本発明の原理構成図である。第６の発明は、利用者からの依頼により定期的に更新される情報源を有する情報提供装置にアクセスして取得するための代理情報取得システムであって、定期的にデータ更新する情報提供装置３００に、利用者からネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在する情報提供装置３００に定期的なアクセスを依頼し、取得した情報を蓄積する利用者端末１００と、利用者端末１００からの依頼に基づいて情報提供装置３００に定期的にアクセスするアクセス手段２０３と、該依頼に対応する情報を情報提供装置３００から取得する情報取得手段２０２と、該情報取得手段２０２により取得した情報を該利用者端末に転送する転送手段２０１とを有する代理情報取得装置２００とを有する。

【００１２】第７の発明は、上記の代理情報取得装置２００が、複数の利用者端末１００からの依頼条件のうち重複するものを検出し、処理を最適化する重複条件検出手段２２２を含む。第８の発明は、上記の代理情報取得装置２００が、定期的に情報提供装置にアクセスして取得した情報が、更新されていた場合のみ記憶手段２２０に保存する更新判定手段２２１を含む。

【００１３】第９の発明は、代理情報取得装置２００が、情報提供装置３００から取得した情報を、参照元がなくなった段階で記憶手段２２０に蓄積されている情報を消去する情報削除手段２０４を含む。第１０の発明は、転送手段取得装置２００が、情報提供装置３００から取得した情報を利用者端末１００に転送する際に、転送命令の実行による無限ループを検出する無限ループ検出手段２１２を含む。

【００１４】第１１の発明は、利用者が定期的に更新される情報源にアクセスして取得するための代理情報取得プログラムを格納した記憶媒体であって、定期的にデータ更新する情報源に、利用者からネットワークを介して直接アクセスする代わりに、該ネットワーク上に存在するシステムに定期的なアクセスを依頼するアクセス依頼プロセスと、アクセス依頼プロセスによる依頼に基づいて利用者に代わって、情報源にアクセスする代理アクセスプロセスと、代理アクセスプロセスにより取得した情報を利用者側に送信させる情報送信プロセスと、情報送信プロセスにより取得した情報を蓄積させる蓄積プロセスとを有する。

【００１５】第１２の発明は、システムへの複数の利用者からの依頼条件のうち重複するものを検出し、処理を最適化する最適化プロセスを含む。第１３の発明は、定期的に情報源にアクセスして取得した情報が、更新されていた場合のみ保存させる更新判定プロセスを含む。第１４の発明は、情報源から取得した情報を、参照元がなくなった段階で消去する情報消去プロセスを含む。

【００１６】第１５の発明は、情報源から取得した情報を転送する際に、無限ループを検出する無限ループ検出プロセスを含む。上記のように第１、第６及び第１１の発明は、ネットワーク上に代理情報取得装置を配置し、利用者は、このシステムに情報を取得するための条件を渡し、当該システムにおいて、与えられた条件に基づいて情報を取得し、これにより得られた結果を情報格納領域に格納する。

【００１７】第２、第７及び第１２の発明は、利用者からシステムに与えられた情報取得条件を管理するテーブルを有することにより、依頼者、アクセス先及びアクセス周期を管理し、同一情報源へのアクセスの重複を避け、アクセスが最適になるようスケジューリングすることにより、ネットワーク及び情報源の負荷の抑制を図ることが可能となる。

【００１８】第３、第８及び第１３の発明は、今回のアクセスにより取得した情報と、前回取得した情報とを比較し、内容が更新されていれば、今回取得した情報を格納し、そうでない場合は、情報が未更新である旨を記載した情報を格納し、利用者に通知する。これにより、蓄積情報の軽減を図ることが可能となる。第４、第９及び第１４の発明は、取得情報の共有格納領域内で一意に識別できる名称を付与し、情報を格納する。また、共有格納領域内の格納されている共有情報に対する参照の有無を識別できるデータを調べ、参照元が存在する間は、共有データは保持し、参照元が無くなった時点で、この共有情報を削除する。共有領域に格納された共有情報を、参照元の増加毎に加算するカウンタを、上記対象テーブルに格納し、共有情報の参照数を管理する。逆に、参照元が参照を終了する場合には、参照数を減算し、参照数が“０”となったとき、この共有情報を参照する参照元が無くなったとして、該当する共有情報及び管理テーブルのレコードを削除する。本発明では、共有情報に対して参照者が存在するかどうかの情報を管理することにより、上記従来の問題を解決する。

【００１９】第５、第９及び第１４の発明は、取得した情報に転送情報がある場合は、この転送情報を記憶しておき、更に、転送先を辿って取得した情報に新たな転送情報が含まれている場合、この新たな転送情報と辿ってきたアドレスを比較し、一致するものがある場合には、ループを構成するので、ここで処理を中断し、この旨を記した情報を格納し、利用者に通知することが可能となる。

【００２０】

【発明の実施の形態】図３は、本発明が適用される共有情報管理システムの概念図である。同図に示すシステムは、ネットワーク上の代理情報取得装置に各利用者端末からアクセスすると、代理情報取得装置は、情報提供装置から情報を取得する。当該構成において、代理情報取得装置は、定期的に更新される情報提供装置の情報を取得して、要求があった利用者端末に返却する。

【００２１】図４は、本発明が適用される共有情報管理システムの構成を示す。同図に示すシステムは、利用者端末装置１００と代理情報取得装置２００及び情報提供装置３００から構成される。利用者端末装置１００は、ネットワークインタフェース１０３及びネットワーク４００を介して代理情報取得装置２００と接続され、入力部１０１と表示部１０２から構成される。

【００２２】代理情報取得装置２００は、ネットワークインタフェース２０１及びネットワーク４００を介して利用者端末１００及び情報提供装置３００と接続され、情報取得部２０２、アクセススケジュールテーブル２１１、ループ検出部２１２、個人情報格納領域２０５、キャッシュテーブル２１３、共有情報格納領域２０７とその情報を管理する共有情報管理テーブル２０６から構成されている。

【００２３】情報提供装置３００は、ネットワークインタフェース３０１及びネットワーク４００を介して代理情報取得装置２００と接続され、提供情報格納領域３０２を有している。

【００２４】

【実施例】以下、図面と共に本発明の実施例を説明する。以下の説明において、利用者端末装置１００の表示部１０２としてＷＷＷブラウザを、ネットワークインタフェース１０３及び２０３としてＨＴＴＰクライアントを、ネットワークインタフェース２０１及び３０１としてＨＴＴＰサーバを、共有情報管理テーブル２０６の検索キーとして情報源のＵＲＬを、情報提供装置３００が提供する情報として画像等のオブジェクトへの参照を含んだＨＴＭＬ文書とする場合について説明する。

【００２５】図５は、本発明の一実施例の情報取得方法を説明するためのフローチャートであり、図６は、本発明の一実施例の利用者からの依頼データの例であり、図７は、本発明の一実施例のアクセススケジュールテーブルの例である。

ステップ１０１）　まず、利用者は、入力部１０１を用いて、必要としている情報のＵＲＬ、アクセス開始時間、アクセス周期を入力し、これらの情報をアクセススケジュールテーブル２１１に追加登録する。ここでアクセススケジュールテーブル２１１は、利用者からの要求を図６のような形式で受け付け、これをアクセス先とアクセス周期でソートした図７に示すような形式に変換して格納しておく。

【００２６】ステップ１０２）　情報取得部２０２は、アクセススケジュールテーブル２１１を参照し、登録された各ＵＲＬを周期的にアクセスする。

ステップ１０３）　アクセスして取得した情報に転送情報が含まれているかを判定し、含まれている場合にはステップ１０４に移行し、含まれていない場合には、ステップ１０７に移行する。。

【００２７】ステップ１０４）　転送情報が含まれている場合には、当該転送情報に従って、転送先にアクセスし直すが、この時、転送先の情報に更に転送情報が含まれており、その転送先が、元のアドレスを示しているような場合には、無限ループとなる。このような現象を避けるため、転送情報が含まれている場合には、ループ検出部２１２において、転送元のアドレスを記憶する。

【００２８】ステップ１０５）　転送先のアドレスが辿ってきたアドレスと一致していないかを確認し、一致している場合にはステップ１０６に移行し、不一致の場合にはステップ１０２に移行し、転送先にアクセスする。

ステップ１０６）　万一、一致した場合には、ループとなっているので、ループ検出部２１２はその旨を記載した情報を利用者の個人情報格納領域２０５に格納する。また、転送元情報は、連続して転送される場合を考慮して、複数記憶すると共に、転送元情報同士を比較する。

【００２９】ステップ１０７）　目的のアクセス先にアクセスし、情報を取得した後は、この情報と、キャッシュテーブル２１３において記憶されている各利用者が直前に得た情報とを比較し、情報が更新されているかどうかを確認する。

ステップ１０８）　更新されていない場合には、その旨を記載した情報を利用者の個人情報格納領域２０５に格納する。

【００３０】ステップ１０９）　キャッシュテーブルにて更新されている場合には、取得した情報を個人情報格納領域２０５に格納するが、その詳細については、図８に沿って後述する。情報格納後は、再びアクセススケジュールテーブルに基づいてアクセス時間が到来したらアクセスを行う（ステップ１０２に移行する）。図８は、本発明の一実施例の個人情報格納領域へのＨＴＭＬ文書追加時の動作を示すフローチャートである。

【００３１】ステップ２０１）　情報取得部２０２は、取得したＨＴＭＬ文書を解析し、インライン展開される参照オブジェクトを全て調べる。

ステップ２０２）　以下の動作は、ステップ２０１で調べた結果の参照オブジェクトの数だけ繰り返す。まず、情報取得部２０２により情報提供装置３００から参照オブジェクトの実体を取得する。

【００３２】ステップ２０３）　次に、この参照オブジェクトのＵＲＬをキーにして、例えば、図９に示すような共有情報管理テーブル２０６を検索し、このオブジェクトが既に登録されているかどうかを確認する。登録されている場合にはステップ２０４に移行し、そうでない場合にはステップ２０７に移行する。

ステップ２０４）　該当するオブジェクトが登録されていた場合には、そのオブジェクトを共有情報格納領域２０７から取り出す。

【００３３】ステップ２０５）　ステップ２０２で取得したオブジェクトとデータの照合を行い、同一の場合にはステップ２０６に移行し、異なる場合にはステップ２０７に移行する。

ステップ２０６）　取得したオブジェクトとデータが同一であれば、ＨＴＭＬは共有情報格納領域２０７にあるオブジェクトを参照すればよく、新たに取得したオブジェクトを格納する必要はない。このオブジェクトを参照するＨＴＭＬが増えたことを記録するために、共有情報管理テーブル２０６のこのオブジェクトに関するレコードの参照数の項目に１を加算する。

【００３４】ステップ２０７）　一方、ＨＴＭＬ文書側も、オブジェクトの参照情報を共有情報格納領域２０７に格納されているオブジェクトを参照するように書き換える。また、ステップ２０５の照合において、オブジェクトのデータが同一でなかった場合や、ステップ２０３の確認においてオブジェクトが共有情報格納領域２０７に登録されていなかった場合には、ステップ２０２によ

り取得した新しいオブジェクトを共有情報格納領域２０７に登録する必要がある。この場合、取得したオブジェクトに新たな共有ファイル名を付与し、共有情報格納領域２０７に格納する。

【００３５】ステップ２０８）　更に、共有情報管理テーブル２０６にこのオブジェクトのための新たなレコードを作成する。

ステップ２０９）　これらの処理の後、ＨＴＭＬ文書側のオブジェクトの参照情報を共有情報格納領域２０７に新たに格納したオブジェクトを参照するように書き換える。

【００３６】ステップ２１０）　参照オブジェクトの処理が終了した場合にはステップ２１１に移行し、未終了の場合には、ステップ２０２に移行し、これらの処理をこのＨＴＭＬ文書が参照しているオブジェクトの数だけ繰り返す。

ステップ２１１）　最後に参照情報を書き換えた上記ＨＴＭＬを含むＨＴＭＬ文書を生成し、これを個人情報格納領域２０５に格納し、処理を終了する。

【００３７】次に、利用者が個人情報格納領域２０５に格納しているＨＴＭＬ文書を削除したい場合について以下に説明する。図１０は、本発明の一実施例の個人情報格納領域の情報を削除する場合のフローチャートである。利用者は入力部１０１を用いて、削除したいＨＴＭＬ文書のＵＲＬを入力し、代理情報取得装置２００の情報削除部２０４に情報の削除を依頼する。これにより、代理情報取得装置２００は、以下のような動作を行う。

【００３８】ステップ３０１）　情報削除部２０４は、利用者により送信されたＵＲＬを受信する。

ステップ３０２）　このＵＲＬで示されるＨＴＭＬ文書を個人格納領域２０５から取り出す。

ステップ３０３）　このＨＴＭＬ文書に含まれている、参照情報のうち、参照先が共有情報格納領域２０７にあるものを抜き出す。

【００３９】ステップ３０４）　これらのオブジェクトへの参照が１つ減ったことを示すため、共有情報管理テーブル２０６中の該当する各レコードの参照数から１を減算する。

ステップ３０５）　このとき、共有情報管理テーブル２０６の参照数が０となった場合には、ステップ３０６に移行し、そうでない場合には、ステップ３０７に移行する。

【００４０】ステップ３０６）　参照数が０となった場合には、このオブジェクトに対する参照元が全てなくなったとみなし、共有情報格納領域２０７に格納されているオブジェクトの実体及び共有情報管理テーブル２０６中の、このオブジェクトに関するレコードを削除する。

ステップ３０７）　参照オブジェクトの処理が終了した場合には、ステップ３０８に移行し、未終了の場合にはステップ３０３に移行する。

【００４１】ステップ３０８）　その後、個人情報格納領域２０５に格納されている削除を依頼されたＨＴＭＬ文書を削除する。

また、上記の実施例では、図４に示す構成に基づいて説明したが、代理情報取得装置２００における情報取得部２０２、ループ検出部２１２、情報削除部２０４等の機能をプログラムとして構築し、当該代理情報取得装置２００に接続されるディスク装置や、フロッピーディスクやＣＤ－ＲＯＭ等の可搬記憶媒体に格納しておき、本システムの実行時にインストールすることにより、容易に本発明を実現することが可能となる。

【００４２】なお、本発明は、上記の実施例に限定されることなく、特許請求の範囲内で種々変更・応用が可能である。

【００４３】

【発明の効果】上述のように、本発明によれば、定期的に更新される情報の取得を、ネットワーク上に存在するシステムに依頼することにより、利用者が負うべき様々なコストを抑えることができるだけでなく、情報源が被るアクセス負荷の抑制にも貢献できる。

【００４４】また、代理情報取得装置内においては、重複するオブジェクトを共有することにより、情報格納領域を節約することができる。また、共有オブジェクトの参照数を管理することにより、不必要になったオブジェクトを消去するタイミングを掴むことも可能であり、常に最適な情報格納領域の管理が可能である。

【図面の簡単な説明】

【図１】本発明の原理を説明するための図である。

【図２】本発明の原理構成図である。

【図３】本発明が適用される共有情報管理システムの概念図である。

【図４】本発明が適用される共有情報管理システムの構成図である。

【図５】本発明の一実施例の情報取得方法を説明するためのフローチャートである。

【図６】本発明の一実施例の利用者からの依頼データの例である。

【図７】本発明の一実施例のアクセススケジュールテーブルの例である。

【図８】本発明の一実施例の個人情報格納領域へのＨＴＭＬ文書追加時の動作を示すフローチャートである。

【図９】本発明の一実施例の情報管理テーブルの例である。

【図１０】本発明の一実施例の個人情報格納領域の情報を削除する場合のフローチャートである。

【図１１】従来の利用者毎にネットワークを介して情報提供装置にアクセスする形態を示す図である。

【符号の説明】

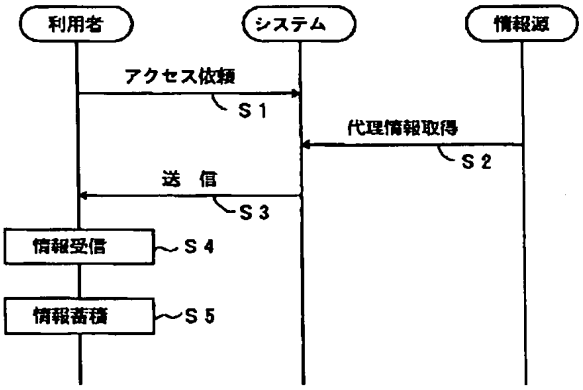
１００　利用者端末装置

１０１　入力部

１０２　表示部
１０３　ネットワークインタフェース
２００　代理情報取得装置
２０１　ネットワークインタフェース、転送手段
２０２　情報取得部、情報取得手段
２０３　ネットワークインタフェース、アクセス手段
２０４　情報削除部、情報削除手段
２０５　個人情報格納領域
２０６　共有情報管理テーブル
２０７　共有情報格納領域
２１１　アクセススケジュールテーブル
２１２　ループ検出部、無限ループ検出手段
２１３　キャッシュテーブル
２２０　記憶手段
２２１　更新判定手段
２２２　重複条件検出手段
３００　情報提供装置
３０１　ネットワークインタフェース
３０２　提供情報格納領域
４００　ネットワーク

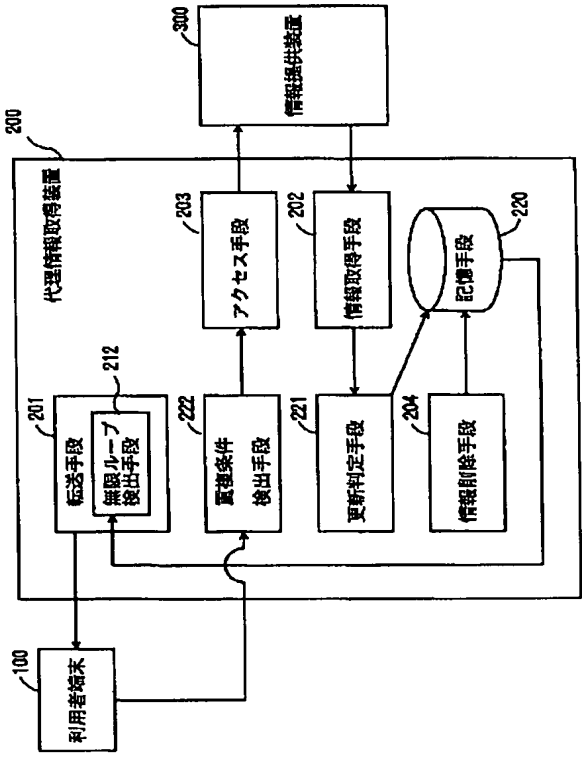
【図１】

本発明の原理を説明するための図



【図２】

本発明の原理構成図



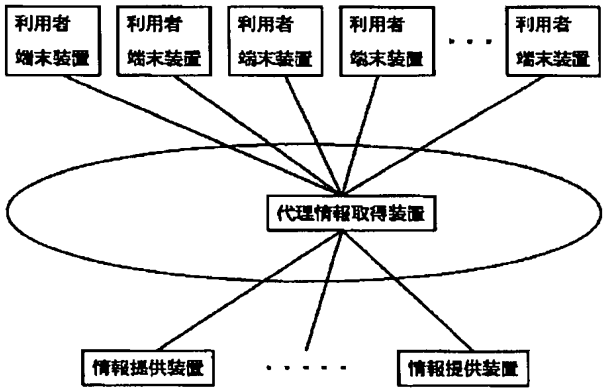
【図６】

本発明の一実施例の利用者からの依頼データの例

依頼者ＩＤ	アクセス先ＵＲＬ	開始時間（年／月／日／時：分）	アクセス周期
000121	-abc.co.jp/index.html	1997/01/01/10:00	１ヶ月
000121	-asahi.com/index.html	1997/70101/08:30	１時間
000121	-mainichi.or.jp/index.html	1997/01/01/07:00	３０分
002100	-asahi.com/index.html	1997/03/10/08:30	１日
002100	-mainichi.or.jp/index.html	1997/03/10/07:30	１日
000080	-mainichi.or.jp/index.html	1997/05/15/10:30	６時間
000080	-asahi.com/index.html	1997/05/15/07:00	８時間
000080	-www.ntt.co.jp/index.html	1997/05/15/08:00	１０日
000080	-abc.co.jp/index.html	1997/05/15/10:00	１ヶ月

【図３】

本発明が適用される共有情報管理システムの概念図



【図７】

本発明の一実施例のアクセススケジュールテーブルの例

アクセス先URL	アクセス周期	依頼者ＩＤ
-asahi.com/index.html	１ヶ月	000121
-	８時間	000080
-	１日	002100
-mainichi.or.jp/index.html	３０分	000121
-	６時間	000080
-	１日	002100
-www.ntt.co.jp/index.html	１０日	000080
-abc.co.jp/index.html	１ヶ月	000121
-		000080
-		

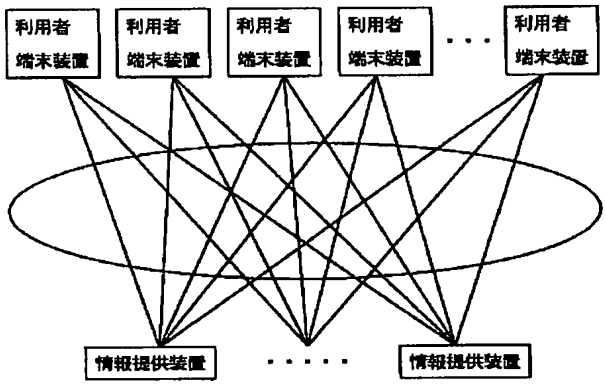
【図９】

本発明の一実施例の情報管理テーブルの例

共有ファイル名	情報元URL	参照数
970101-00001.html	www.abc.co.jp/index.html	5
970101-00001.jpg	www.abc.co.jp/img/img1.jpg	5
970101-00002.jpg	www.abc.co.jp/img/img2.jpg	5
970101-00003.jpg	www.abc.co.jp/img/img3.jpg	5
970101-00002.html	www.ntt.co.jp/index.html	1
970101-00001.gif	www.ntt.co.jp/image/gif1.gif	1
970101-00002.gif	www.ntt.co.jp/image/gif2.gif	1
970101-00003.gif	www.ntt.co.jp/image/gif3.gif	1

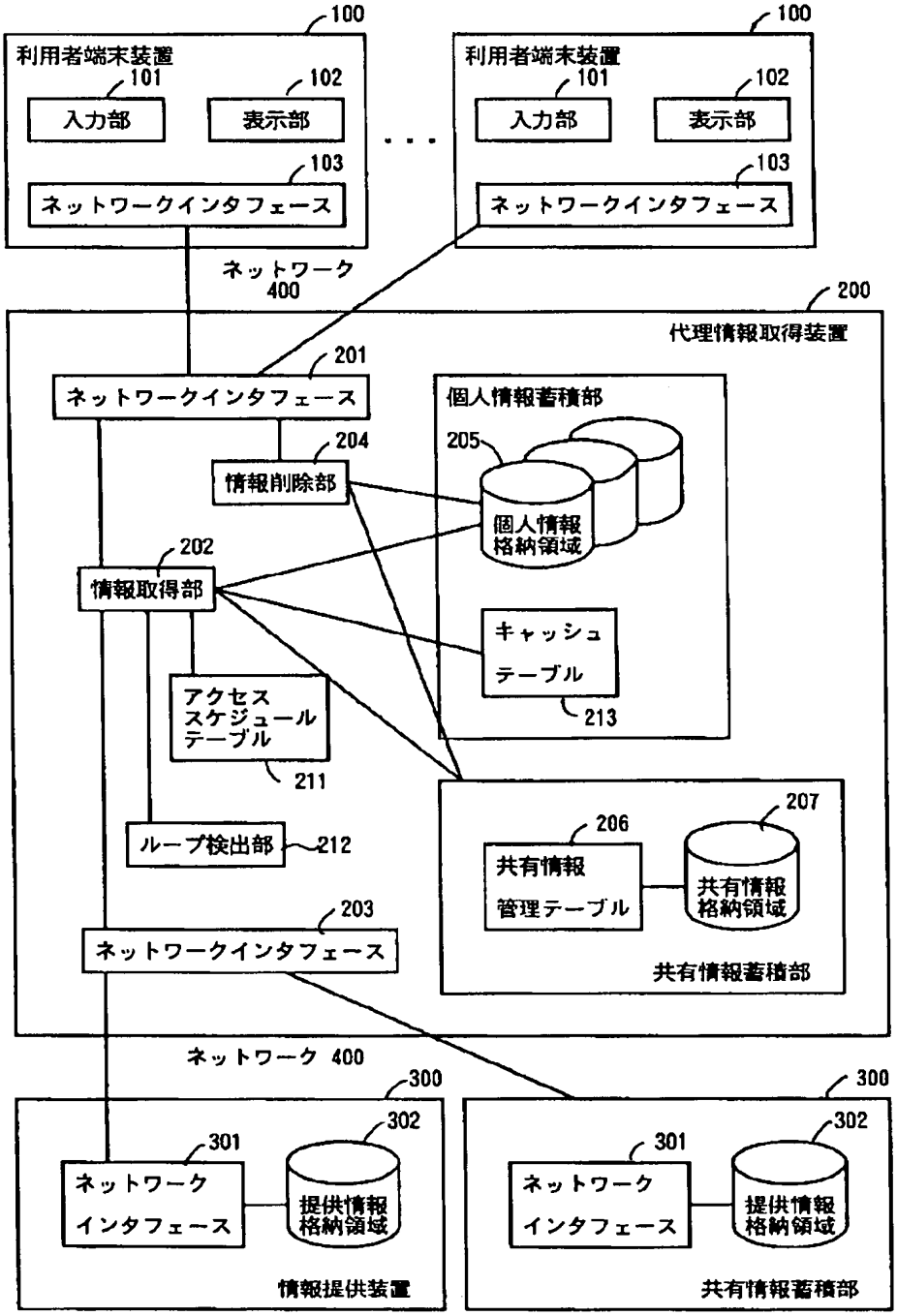
【図１１】

従来の利用者毎にネットワークを介して
情報提供装置にアクセスする形態を示す図



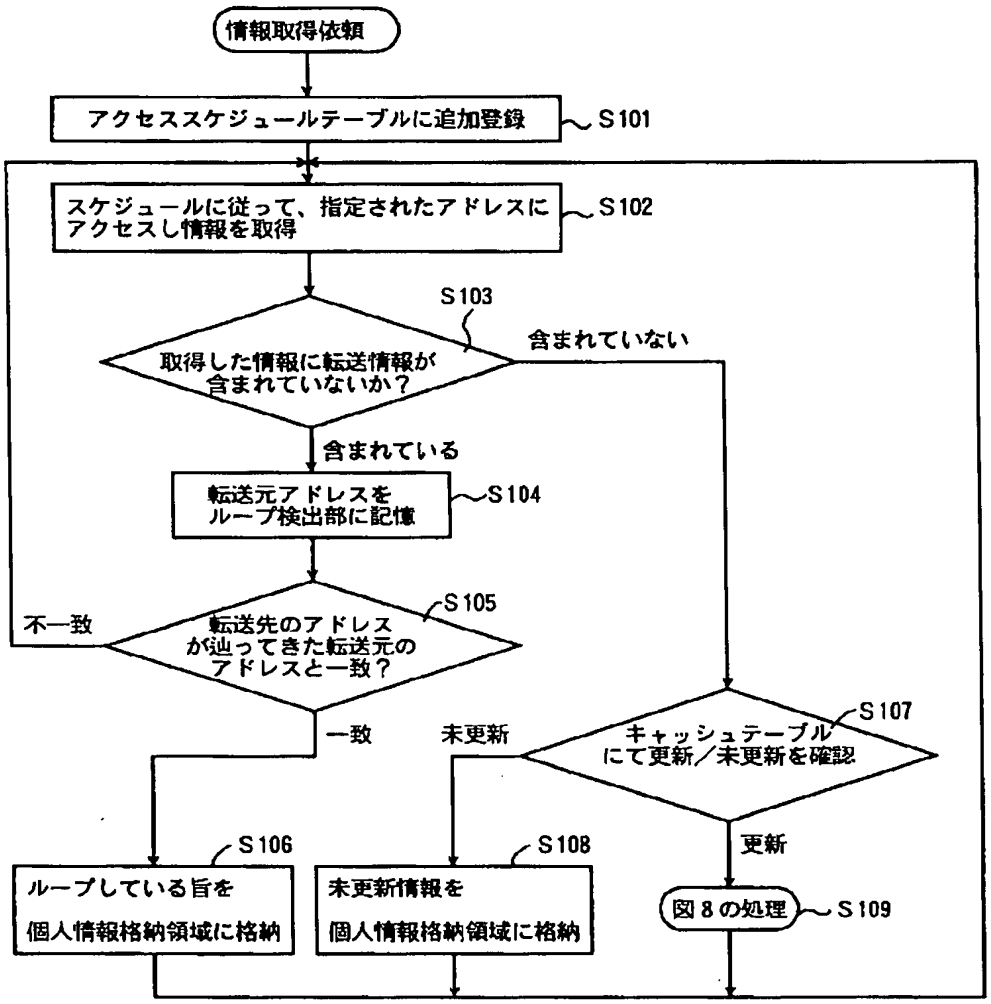
【図４】

本発明が適用される共有情報管理システムの構成図



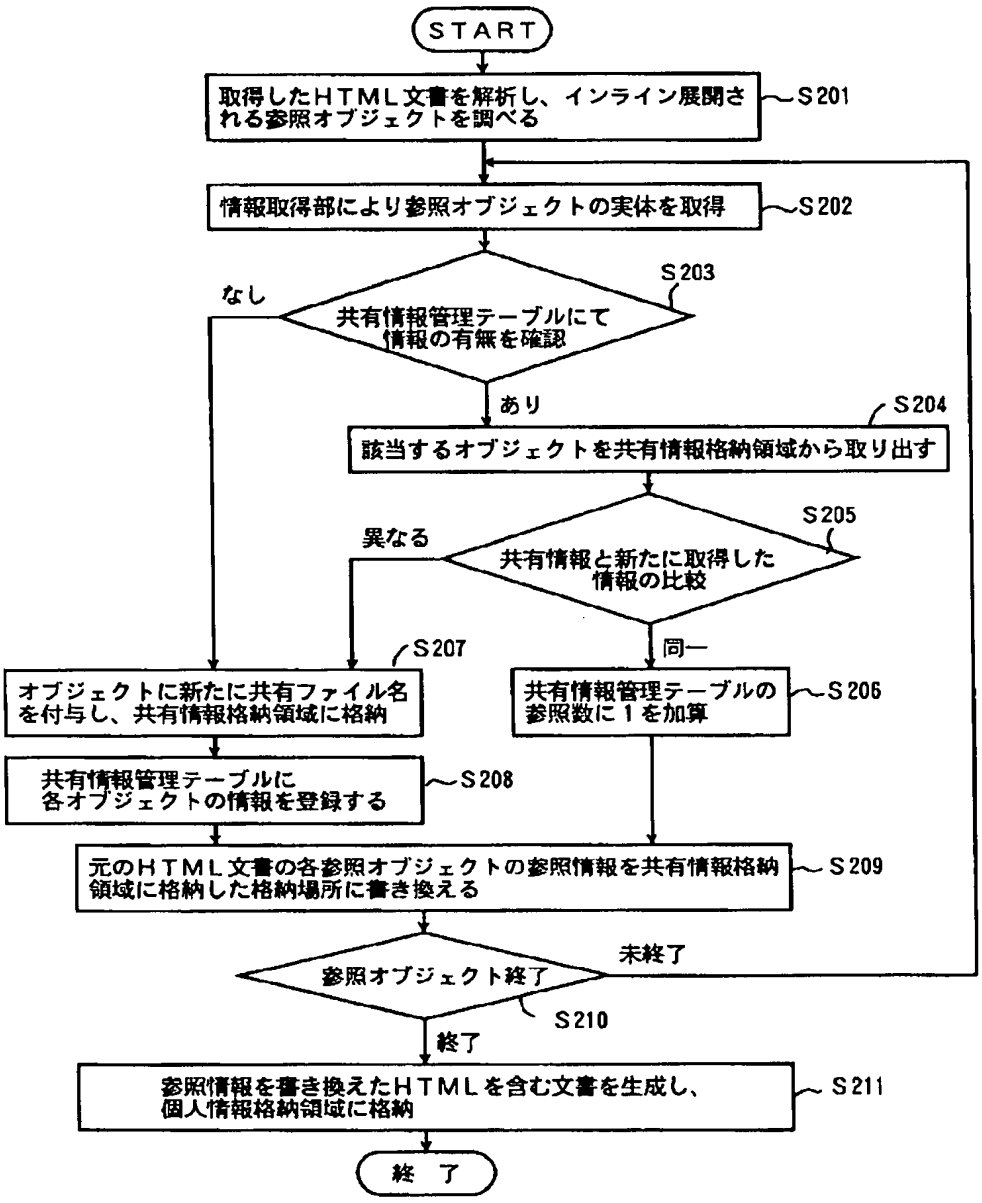
【図５】

本発明の一実施例の情報取得方法を説明するためのフローチャート



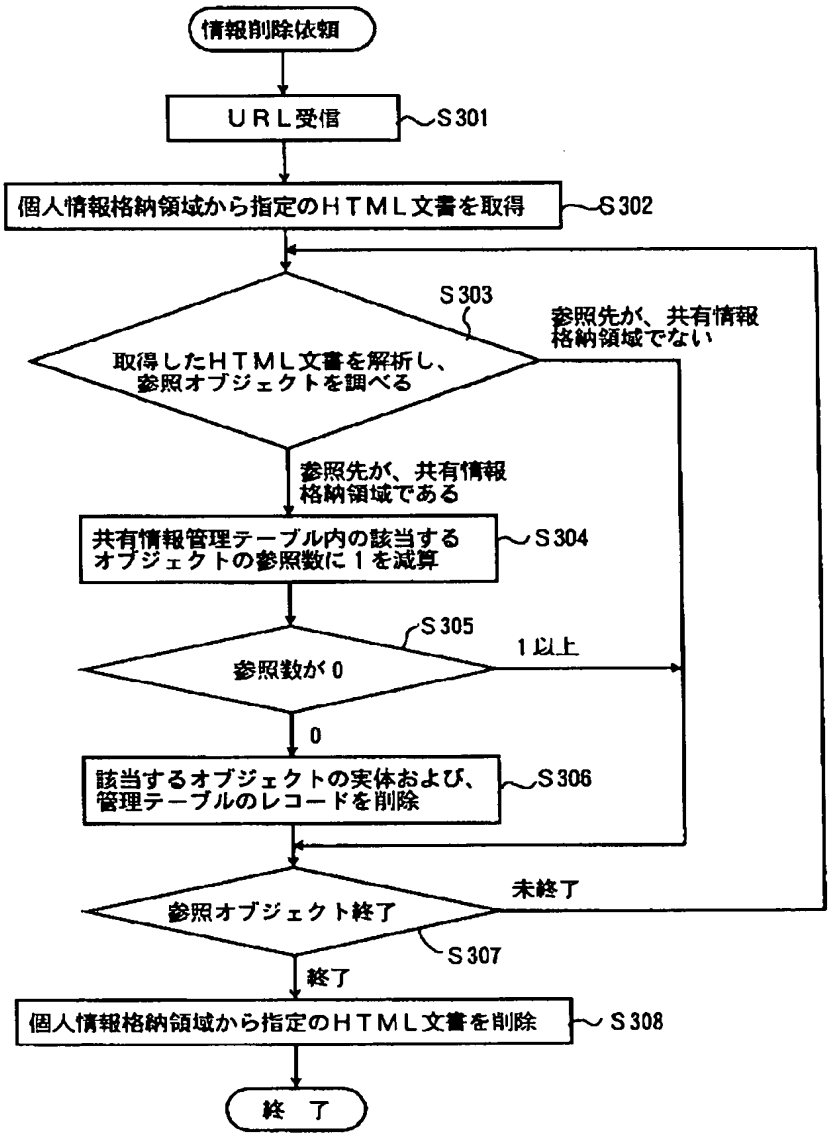
【図８】

本発明の一実施例の個人情報格納領域への
ＨＴＭＬ文書追加時の動作を示すフローチャート



【図１０】

本発明の一実施例の個人情報格納領域の情報を削除する場合のフローチャート



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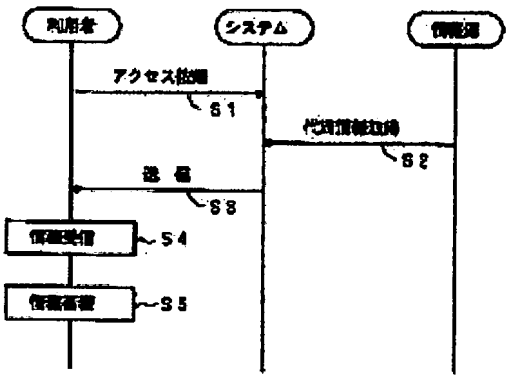
(54) METHOD FOR OBTAINING SUBSTITUTE INFORMATION AND SYSTEM THEREFOR AND STORAGE MEDIUM FOR STORING SUBSTITUTE INFORMATION OBTAINING PROGRAM

(57)Abstract:
PROBLEM TO BE SOLVED: To reduce various costs to be paid by a user, and to suppress an access load to be imposed on an information source.
SOLUTION: Periodic access is requested to a system existing on a network instead of direct access from a user through the network to an information source whose data are periodically updated. Then, the system obtains information by periodically performing access to the information source, and transmits it to the user. The information is obtained from the system and stored at the user's side.



* NOTICES *

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention]This invention relates to the storage which stored the substitute information acquisition method, the system, and the substitute information acquisition program, It is related with the storage which stored the substitute information acquisition method for a user to make the work which accesses the information updated periodically and acquires information do on the substitute system on a network instead of a user especially, the system, and the substitute information acquisition program.

[0002]
[Description of the Prior Art]Drawing 11 shows the gestalt which accesses an information providing device via a network for every conventional user. Thereby, the composition shown in the figure acquires the information updated in the information providing device by accessing an information providing device directly via a network for every user terminal.

[0003](1) According to a renewal period, the user accessed the information providing device and acquires the information updated periodically from the terminal. These days, if access time and a cycle are beforehand set to the access point, the terminal software accessed automatically is also sold.

(2) In the network which is installing the fire wall, the cache function of a proxy server is used and improvement in the access speed of information acquisition and mitigation of the access load of sources of information are aimed at.

[0004]
[Problem(s) to be Solved by the Invention]However, under the present circumstances in the method of (1) of the above-mentioned former, access to sources of information is performed in most cases for every user. Therefore, though natural when a user is going to acquire manually the information on the sources of information updated periodically from a terminal, a terminal and a network must always be worked, it must double with the cycle of renewal of information, and information must be supervised. In order to reduce the trouble of information surveillance, these days, the software which accesses the set-up sources of information automatically is also

developed, but even in this case, a terminal is always worked, and in order to have to change into the state where the network was connected, such costs start too.

[0005]The situation of accessing for every user also from the position of sources of information brings very high access load to sources of information with high access frequency. Therefore, acquiring information increasingly takes time, and there is the user side, also when it becomes impossible for network cost not only to to cost dearly, but to acquire information. The cache function of a proxy server accumulates temporarily the information accessed to the last, when exceeding a certain constant rate, it has only a function eliminated from the old thing, and it has not gone by the method of (2) of the above-mentioned former to management of each information. Since the information on sources of information does not perform the cache function of a general proxy server to the check of updating / renewal of un-, the information accumulated in cash may already be old. Therefore, since the user cannot trust information collected on cash, cash must be cleared, a command which accesses sources of information again must be sent from a terminal, and each user will do direct access to sources of information after all. Thus, there are few effects of cash to the sources of information updated frequently.

[0006]As for common informations, originally, although cash is a temporary share function, it is not desirable to delete, as long as there is a user who needs the information. It may happen to eliminate, although the user who needs information still needs the cache function of a proxy server since it has not managed each accumulation information as mentioned above.

[0007]As a result of accessing sources of information, there are some transmission information (for example, <METAHTTP-EQUIV="REFRESH" CONTENT="0 in HTML, URL= destination URL", etc.) is indicated to be to the information. In the WWW browser of these days, when the information the destination is indicated to be is acquired, an access point is promptly changed into the address of the destination, and it has specification which acquires information, but transmission information is further shown in the information on the destination, and the destination may show the source. In such a case, the loop of transmission will be constituted and it will continue accessing by turns forever. When having accessed manually from the WWW browser, even if such a phenomenon occurs, access can be stopped intentionally and a loop can be cut, but in carrying out automatic access, it will become a problem if a system has a detection function of such a loop.

[0008]This invention was made in view of the above-mentioned point, and can press down various costs which a user should undertake, and an object of this invention is to provide the storage which stored the substitute information acquisition method which can control the access load with which sources of information are covered, the system, and the substitute information acquisition program.

[0009]
[Means for Solving the Problem]Drawing 1 is a figure for explaining a principle of this invention. In a substitute information acquisition method for the 1st invention to access sources of information updated periodically, and for a user acquire it, Request access periodical to a system which exists on this network instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network (Step 1), and a system

accesses sources of information periodically, Information is acquired (Step 2), it transmits to the user side (Step 3), and information is acquired and (Step 4) accumulated in the user side from a system (Step 5).

[0010]The 2nd invention detects what overlaps among request conditions from two or more users to a system, and optimizes processing. In a system, information which accessed sources of information periodically and was acquired saves the 3rd invention, only when updated. The 4th invention eliminates information acquired from sources of information in a stage whose referring to agency was lost.

[0011]When the 5th invention transmits information acquired from sources of information, it detects an infinite loop. Drawing 2 is a principle lineblock diagram of this invention. The 6th invention is a substitute information acquisition system for accessing an information providing device which has the sources of information periodically updated by request from a user, and acquiring, Instead of carrying out direct access to the information providing device 300 which carries out renewal of data periodically via a network from a user, The user terminal 100 which requests periodical access from the information providing device 300 which exists on this network, and accumulates acquired information in it, The accessing means 203 which accesses the information providing device 300 periodically based on a request from the user terminal 100, It has the substitute information acquisition system 200 which has the information acquisition means 202 which acquires information corresponding to this request from the information providing device 300, and the transfer means 201 which transmits information acquired by this information acquisition means 202 to this user terminal.

[0012]The above-mentioned substitute information acquisition system 200 detects what overlaps among request conditions from two or more user terminals 100, and the 7th invention includes the duplication condition detecting means 222 which optimizes processing. The 8th invention includes the updating judging means 221 saved at the memory measure 220, only when information which the above-mentioned substitute information acquisition system 200 accessed an information providing device periodically, and acquired is updated.

[0013]The 9th invention includes the information deleting means 204 which eliminates information accumulated in the memory measure 220 in a stage whose referring to agency was lost in information which the substitute information acquisition system 200 acquired from the information providing device 300. The 10th invention contains an infinite loop detection means 212 to detect an infinite loop by execution of a transfer command, when the transfer means acquisition device 200 transmits information acquired from the information providing device 300 to the user terminal 100.

[0014]The 11th invention is provided with the following.

It is the storage which stored a substitute information acquisition program for a user to access sources of information updated periodically, and acquire, An access request process of requesting access periodical to a system which exists on this network instead of carrying out direct access to sources of information which carry out renewal of data periodically via a network from a user.

A substitute access process of accessing sources of information instead of a user based on a request by an access request process.

A transmitting information process which makes information acquired by a substitute access process transmit to the user side.

An accumulation process in which information acquired by a transmitting information process is stored up.

[0015]The 12th invention detects what overlaps among request conditions from two or more users to a system, and includes an optimization process which optimizes processing. The 13th invention includes an updating judging process made to save only when information which accessed sources of information periodically and was acquired is updated. The 14th invention includes an information elimination process of eliminating information acquired from sources of information in a stage whose referring to agency was lost.

[0016]When the 15th invention transmits information acquired from sources of information, it includes an infinite loop detection process of detecting an infinite loop. As mentioned above, the 1st, 6th, and 11th inventions arrange a substitute information acquisition system on a network, and a user hands conditions for acquiring information to this system, in the system concerned, he acquires information based on given conditions, and stores in an information storing region a result obtained by this.

[0017]The 2nd, 7th, and 12th inventions by having a table which manages an information acquisition condition given to a system from a user, It becomes possible by managing a client, an access point, and an access cycle, avoiding duplication of access to the same sources of information, and carrying out scheduling so that access may become the optimal to aim at control of load of a network and sources of information.

[0018]If information acquired by this access is compared with information acquired last time and the contents are updated, the 3rd, 8th, and 13th inventions will store information acquired this time, will store information which indicated not having updated information when that is not right, and will notify a user of it. This becomes possible to aim at mitigation of accumulation information. The 4th, 9th, and 14th inventions give a name uniquely discriminable in a share storing region of acquisition information, and store information. While data which can identify existence of reference to common informations in a share storing region stored is investigated and a referring to agency exists, shared data is held, and when a referring to agency is lost, these common informations are deleted. A counter which adds common informations stored in a shared area for every increase in a referring to agency is stored in the above-mentioned object table, and the number of references of common informations is managed. On the contrary, a record of applicable common informations and a management table is deleted noting that reference origin which refers to these common informations is lost, when a referring to agency ends reference, the number of references is subtracted and the number of references is set to "0." In this invention, the above-mentioned conventional problem is solved by managing information on whether a referencing person exists to common informations.

[0019]When transmission information is in acquired information, the 5th, 9th, and 14th inventions, Since a loop is constituted when this transmission information is memorized, this new transmission information is compared with a followed address when new transmission information is further included in information which followed and acquired the destination, and there is a match, Processing is interrupted here, information which described this purport is stored, and it becomes possible to notify a user.

[0020]
[Embodiment of the Invention]Drawing 3 is a key map of the common-informations managerial system with which this invention is applied. If the system shown in the figure accesses the substitute information acquisition system on a network from each user terminal, a substitute information acquisition system will acquire information from an information providing device. In the composition concerned, a substitute information acquisition system acquires the information on the information providing device updated periodically, and returns it to a user terminal with a demand.

[0021]Drawing 4 shows the composition of the common-informations managerial system with which this invention is applied. The system shown in the figure comprises the user-terminal device 100, the substitute information acquisition system 200, and the information providing device 300. It is connected with the substitute information acquisition system 200 via the network interface 103 and the network 400, and the user-terminal device 100 comprises the input part 101 and the indicator 102.

[0022]The substitute information acquisition system 200 is connected with the user terminal 100 and the information providing device 300 via the network interface 201 and the network 400, It comprises the information acquisition section 202, the access schedule table 211, the loop primary detecting element 212, the personal information storing region 205, the cache table 213, and the common-informations management table 206 that manages the common-informations storing region 207 and its information.

[0023]It is connected with the substitute information acquisition system 200 via the network interface 301 and the network 400, and the information providing device 300 has the provided information storing region 302.

[0024]
[Example]Hereafter, working example of this invention is described with Drawings. In the following explanation, as the indicator 102 of the user-terminal device 100, a WWW browser, As the network interfaces 103 and 203, an HTTP client, The case where it is considered as the HTML document which included the reference to objects, such as a picture, as information which the information providing device 300 provides with an HTTP server as the network interfaces 201 and 301, and provides with URL of sources of information as a search key of the common-informations management table 206 is explained.

[0025]Drawing 5 is a flow chart for explaining the information acquisition method of one working example of this invention.

Drawing 6 is an example of the request data from the user of one working example of this invention, and drawing 7 is an example of the access schedule table of one working example of this invention.

Step 101 First, a user inputs URL of the needed information, access time of onset, and an access cycle using the input part 101, and does additional registration of these information to the access schedule table 211. The access schedule table 211 receives the demand from a user in form like drawing 6, and changes and stores it in form as shown in drawing 7 which sorted this the access point and the access cycle here.

[0026]Step 102 The information acquisition section 202 accesses each registered URL periodically with reference to the access schedule table 211.

Step 103 It judges, when contained, it shifts to Step 104, and when it is not included whether transmission information is included in the information accessed and acquired, it shifts to Step 107. .

[0027]Step 104. When transmission information is included, the destination is reaccessed according to the transmission information concerned, but transmission information is further included in the information on the destination at this time.
When the destination shows the original address, it serves as an infinite loop.

In order to avoid such a phenomenon, when transmission information is included, the address of the source is memorized in the loop primary detecting element 212.

[0028]Step 105 It checks whether it is in agreement with the address which the address of the destination has followed, when in agreement, it shifts to Step 106, in being inharmonious, it shifts to Step 102, and the destination is accessed.

Step 106 Since it should be a loop when in agreement, the loop primary detecting element 212 stores in a user's personal information storing region 205 the information which indicated that. Two or more source information is memorized in consideration of the case where it is transmitted continuously, and it compares source information.

[0029]Step 107 After accessing the target access point and acquiring information, this information is compared with the information which each user remembered in the cache table 213 acquired immediately before, and it is checked whether information is updated or not.

Step 108 When not updated, the information which indicated that is stored in a user's personal information storing region 205.

[0030]Step 109 When updated with the cache table, the acquired information is stored in the personal information storing region 205, but the details are later mentioned along with drawing 8. After information storing will be accessed if access time comes based on an access schedule table again (it shifts to Step 102). Drawing 8 is a flow chart which shows the operation at the

time of the HTML document addition to the personal information storing region of one working example of this invention.

[0031]Step 201 The information acquisition section 202 analyzes the acquired HTML document, and investigates all the reference objects by which an inline substitution is carried out.

Step 202 Only the number of the reference objects of the result investigated at Step 201 repeats the following operations. First, the substance of a reference object is acquired from the information providing device 300 by the information acquisition section 202.

[0032]The common-informations management table 206 as used Step 203, next URL of this reference object as a key, for example, shown in drawing 9 is searched, and it is checked whether this object is already registered. When registered, it shifts to Step 204, and when that is not right, it shifts to Step 207.

Step 204 When the applicable object is registered, the object is taken out from the common-informations storing region 207.

[0033]Step 205 Collation of the object and data which were acquired at Step 202 is performed, in being the same, it shifts to Step 206, and in differing, it shifts to Step 207.

Step 206 What is necessary is just to refer to the acquired object and the object which has HTML in the common-informations storing region 207 if data is the same, and it is not necessary to store the newly acquired object. In order to record that HTML which refers to this object increased, 1 is added to the item of the number of references of the record about this object of the common-informations management table 206.

[0034]Step 207 On the other hand, the HTML document side is also rewritten so that the object stored in the common-informations storing region 207 in the reference information of the object may be referred to. The case where the data of an object is not the same in collation of Step 205, When the object is not registered into the common-informations storing region 207 in the check of Step 203, it is necessary to register into the common-informations storing region 207 the new object acquired by Step 202. In this case, a new shared file name is given to the acquired object, and it stores in the common-informations storing region 207.

[0035]Step 208 The new record for this object is further created to the common-informations management table 206.

Step 209 It rewrites so that the object which newly stored the reference information of the object after processing of these and by the side of an HTML document in the common-informations storing region 207 may be referred to.

[0036]When processing of step 210 reference object is completed, it shifts to Step 211, and in not ending, it shifts to Step 202 and only the number of objects with which this HTML document is referring to these processings is repeated.

Step 211 The HTML document containing the above-mentioned HTML which finally rewrote reference information is generated, this is stored in the personal information storing region 205, and processing is ended.

[0037]Next, the case where a user wants to delete the HTML document stored in the personal information storing region 205 is explained below. Drawing 10 is a flow chart in the case of deleting the information on the personal information storing region of one working example of this invention. A user inputs URL of an HTML document to delete using the input part 101, and requests deletion of information from the information cutout 204 of the substitute information acquisition system 200. Thereby, the substitute information acquisition system 200 performs the following operations.

[0038]Step 301 The information cutout 204 receives URL transmitted by the user.
Step 302 The HTML document shown by this URL is taken out from the individual storing region 205.

Step 303 A reference destination extracts the thing in the common-informations storing region 207 among the reference information contained in this HTML document.

[0039]Step 304 1 is subtracted from the number of references of each applicable record in the common-informations management table 206 in order to show that one reference to the object of these decreased.

Step 305 When the number of references of the common-informations management table 206 is set to 0 at this time, it shifts to Step 306, and when that is not right, it shifts to Step 307.

[0040]Step 306 When the number of references is set to 0, it considers that all the reference origin to this object was lost, and the record about this object in the substance of the object stored in the common-informations storing region 207 and the common-informations management table 206 is deleted.

When processing of step 307 reference object is completed, it shifts to Step 308 and, in not ending, shifts at Step 303.

[0041]The HTML document from which the deletion stored in the personal information storing region 205 was requested is deleted after that [step 308].

Although above-mentioned working example explained based on the composition shown in drawing 4, The function of the information acquisition section 202 in the substitute information acquisition system 200, the loop primary detecting element 212, and information cutout 204 grade is built as a program, It becomes possible to realize this invention easily by storing in portable storages connected to the substitute information acquisition system 200 concerned, such as a disk unit, a floppy disk, and CD-ROM, and installing at the time of execution of this system.
[0042]Change and application are variously possible for this invention within Claims, without being limited to above-mentioned working example.

[0043]
[Effect of the Invention]As mentioned above, acquisition of the information updated periodically is requested from the system which exists on a network in this invention.

Therefore, it not only can hold down various costs which a user should undertake, but it can contribute to control of the access load with which sources of information are covered.

[0044]An information storing region can be saved by sharing the object which overlaps in a substitute information acquisition system. By managing the number of references of a common object, it is also possible to hold the timing which eliminates the object which became unnecessary, and management of the always optimal information storing region is possible.

[Translation done.]

CLAIMS

[Claim(s)]
[Claim 1]In a substitute information acquisition method for a user to access sources of information updated periodically, and acquire, Instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network, A substitute information acquisition method periodical access is requested from a system which exists on this network, and said system accesses said sources of information periodically, acquiring information, transmitting to said user, acquiring information from said system and accumulating in said user side.
[Claim 2]The substitute information acquisition method according to claim 1 which detects what overlaps among request conditions from two or more users to said system, and optimizes processing.
[Claim 3]The substitute information acquisition method according to claim 1 saved only when information which accessed said sources of information periodically and was acquired in said system is updated.
[Claim 4]The substitute information acquisition method according to claim 1 which eliminates information acquired from said sources of information in a stage whose referring to agency was lost.
[Claim 5]The substitute information acquisition method according to claim 1 which detects an infinite loop when transmitting information acquired from said sources of information.
[Claim 6]A substitute information acquisition system characterized by comprising the following for accessing an information providing device which has the sources of information periodically updated by request from a user, and acquiring.
A user terminal which requests periodical access to said information providing device which exists on this network, and accumulates acquired information instead of a user doing direct access to said information providing device which carries out renewal of data periodically via a network.
An accessing means which accesses said information providing device periodically based on a request from said user terminal.
An information acquisition means which acquires information corresponding to this request from said information providing device.
A transfer means which transmits information acquired by this information acquisition means to this user terminal.

[Claim 7]The substitute information acquisition system according to claim 6 including a duplication condition detecting means which said substitute information acquisition system detects what overlaps among request conditions from two or more user terminals, and optimizes processing.
[Claim 8]The substitute information acquisition system according to claim 6 including an updating judging means saved only when information which said substitute information acquisition system accessed said information providing device periodically, and was acquired is updated.
[Claim 9]The substitute information acquisition system according to claim 6 including an information deleting means which eliminates information which acquired said substitute information acquisition system from said information providing device in a stage whose referring to agency was lost.
[Claim 10]The substitute information acquisition system according to claim 6 which contains an infinite loop detection means to detect an infinite loop by execution of a transfer command when transmitting information acquired from said information providing device to said user terminal.
[Claim 11]It is the storage which stored a substitute information acquisition program for a user to access sources of information updated periodically, and acquire, An access request process of requesting access periodical to a system which exists on this network instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network, A substitute access process of accessing said sources of information instead of said user based on a request by said access request process, A storage which stored a substitute information acquisition program having a transmitting information process which makes information acquired by said substitute access process transmit to said user side, and an accumulation process in which information acquired by said transmitting information

process is stored up.
[Claim 12]A storage which stored the substitute information acquisition program according to claim 11 including an optimization process which detects what overlaps among request conditions from two or more users to said system, and optimizes processing.
[Claim 13]A storage which stored the substitute information acquisition program according to claim 11 whose information which accessed said sources of information periodically and was acquired includes an updating judging process made to save only when updated.
[Claim 14]A storage which stored the substitute information acquisition program according to claim 11 including an information elimination process of eliminating information acquired from said sources of information in a stage whose referring to agency was lost.
[Claim 15]A storage which stored the substitute information acquisition program according to claim 11 which includes an infinite loop detection process of detecting an infinite loop when transmitting information acquired from said sources of information.

[Translation done.]

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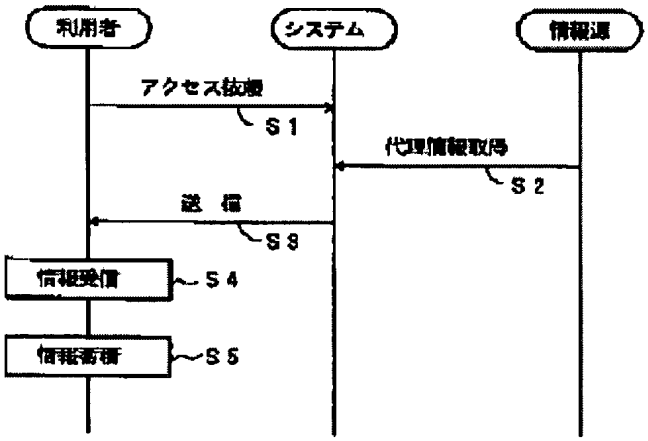
Abstract:
PROBLEM TO BE SOLVED: To reduce various costs to be paid by a user, and to suppress an access load to be imposed on an information source. SOLUTION: Periodic access is requested to a system existing on a network instead of direct access from a user through the network to an information source whose data are periodically updated. Then, the system obtains information by periodically performing access to the information source, and transmits it to the user. The information is obtained from the system and stored at the user's side.



JPO Machine translation abstract:

(57) **Abstract**

SUBJECT Various costs which a user should undertake can be pressed down and the storage which stored the substitute information acquisition method which can control the access load with which sources of information are covered, the system, and the substitute information acquisition program is provided.

Means for Solution This invention instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network, Periodical access is requested from a system which exists on this network, and a system accesses sources of information periodically, acquires information, transmits to a user, and acquires and accumulates information in the user side from a system.

Claim(s)

Claim 1 In a substitute information acquisition method for a user to access sources of information updated periodically, and acquire, Instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network, A substitute information acquisition method periodical access is requested from a system which exists on this network, and said system accesses said sources of information periodically, acquiring information, transmitting to said user, acquiring information from said system and accumulating in said user side.

Claim 2 The substitute information acquisition method according to claim 1 which detects what overlaps among request conditions from two or more users to said system, and optimizes processing.

Claim 3 The substitute information acquisition method according to claim 1 saved only when information which accessed said sources of information periodically and was acquired in said system is updated.

Claim 4 The substitute information acquisition method according to claim 1 which eliminates information acquired from said sources of information in a stage whose referring to agency was lost.

Claim 5 The substitute information acquisition method according to claim 1 which detects an infinite loop when transmitting information acquired from said sources of information.

Claim 6A substitute information acquisition system characterized by comprising the following for accessing an information providing device which has the sources of information periodically updated by request from a user, and acquiring.
A user terminal which requests periodical access to said information providing device which exists on this network, and accumulates acquired information instead of a user doing direct access to said information providing device which carries out renewal of data periodically via a network.
An accessing means which accesses said information providing device periodically based on a request from said user terminal.
An information acquisition means which acquires information corresponding to this request from said information providing device.
A transfer means which transmits information acquired by this information acquisition means to this user terminal.

Claim 7 The substitute information acquisition system according to claim 6 including a duplication condition detecting means which said substitute information acquisition system detects what overlaps among request conditions from two or more user terminals, and optimizes processing.
Claim 8 The substitute information acquisition system according to claim 6 including an updating judging means saved only when information which said substitute information acquisition system accessed said information providing device periodically, and was acquired is updated.
Claim 9 The substitute information acquisition system according to claim 6 including an information deleting means which eliminates information which acquired said substitute information acquisition system from said information providing device in a stage whose referring to agency was lost.
Claim 10 The substitute information acquisition system according to claim 6 which contains an infinite loop detection means to detect an infinite loop by execution of a transfer command when transmitting information acquired from said information providing device to said user terminal.
Claim 11A storage which stored a substitute information acquisition program for a user to access sources of information updated periodically, and acquire, comprising:
An access request process of requesting access periodical to a system which exists on this network instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network.
A substitute access process of accessing said sources of information instead of said user based on a request by said access request process.
A transmitting information process which makes information acquired by said substitute access process transmit to said user side.
An accumulation process in which information acquired by said transmitting information process is stored up.

Claim 12A storage which stored the substitute information acquisition program according to claim 11 including an optimization process which detects what overlaps among request conditions from two or more users to said system, and optimizes processing.
Claim 13A storage which stored the substitute information acquisition program according to claim 11 whose information which accessed said sources of information periodically and was acquired includes an updating judging process made to save only when updated.
Claim 14A storage which stored the substitute information acquisition program according to claim 11 including an information elimination process of eliminating information acquired from said sources of information in a stage whose referring to agency was lost.
Claim 15A storage which stored the substitute information acquisition program according to claim 11 which includes an infinite loop detection process of detecting an infinite loop when transmitting information acquired from said sources of information.

Detailed Description of the Invention
0001
Field of the Invention This invention relates to the storage which stored the substitute information acquisition method, the system, and the substitute information acquisition program,

It is related with the storage which stored the substitute information acquisition method for a user to make the work which accesses the information updated periodically and acquires information do on the substitute system on a network instead of a user especially, the system, and the substitute information acquisition program.

0002

Description of the Prior Art Drawing 11 shows the gestalt which accesses an information providing device via a network for every conventional user. Thereby, the composition shown in the figure acquires the information updated in the information providing device by accessing an information providing device directly via a network for every user terminal.

0003(1) According to a renewal period, the user accessed the information providing device and acquires the information updated periodically from the terminal. These days, if access time and a cycle are beforehand set to the access point, the terminal software accessed automatically is also sold.

(2) In the network which is installing the fire wall, the cache function of a proxy server is used and improvement in the access speed of information acquisition and mitigation of the access load of sources of information are aimed at.

0004

Problem(s) to be Solved by the Invention However, under the present circumstances in the method of (1) of the above-mentioned former, access to sources of information is performed in most cases for every user. Therefore, though natural when a user is going to acquire manually the information on the sources of information updated periodically from a terminal, a terminal and a network must always be worked, it must double with the cycle of renewal of information, and information must be supervised. In order to reduce the trouble of information surveillance, these days, the software which accesses the set-up sources of information automatically is also developed, but even in this case, a terminal is always worked, and in order to have to change into the state where the network was connected, such costs start too.

0005 The situation of accessing for every user also from the position of sources of information brings very high access load to sources of information with high access frequency. Therefore, acquiring information increasingly takes time, and there is the user side, also when it becomes impossible for network cost not only to to cost dearly, but to acquire information. The cache function of a proxy server accumulates temporarily the information accessed to the last, when exceeding a certain constant rate, it has only a function eliminated from the old thing, and it has not gone by the method of (2) of the above-mentioned former to management of each information. Since the information on sources of information does not perform the cache function of a general proxy server to the check of updating / renewal of un-, the information accumulated in cash may already be old. Therefore, since the user cannot trust information collected on cash, cash must be cleared, a command which accesses sources of information again must be sent from a terminal, and each user will do direct access to sources of information after all. Thus, there are few effects of cash to the sources of information updated frequently.

0006 As for common informations, originally, although cash is a temporary share function, it is not desirable to delete, as long as there is a user who needs the information. It may happen to eliminate, although the user who needs information still needs the cache function of a proxy server since it has not managed each accumulation information as mentioned above.

0007 As a result of accessing sources of information, there are some transmission information (for example, <METAHTTP-EQUIV="REFRESH" CONTENT="0 in HTML, URL= destination URL", etc.) is indicated to be to the information. In the WWW browser of these days, when the information the destination is indicated to be is acquired, an access point is promptly changed into the address of the destination, and it has specification which acquires information, but transmission information is further shown in the information on the destination, and the destination may show the source. In such a case, the loop of transmission will be constituted and it will continue accessing by turns forever. When having accessed manually from the WWW browser, even if such a phenomenon occurs, access can be stopped intentionally and a loop can be cut, but in carrying out automatic access, it will become a problem if a system has a detection function of such a loop.

0008 This invention was made in view of the above-mentioned point, and can press down various costs which a user should undertake, and an object of this invention is to provide the storage which stored the substitute information acquisition method which can control the access load with which sources of information are covered, the system, and the substitute information acquisition program.

0009
Means for Solving the Problem Drawing 1 is a figure for explaining a principle of this invention. In a substitute information acquisition method for the 1st invention to access sources of information updated periodically, and for a user acquire it, Request access periodical to a system which exists on this network instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network (Step 1), and a system accesses sources of information periodically, Information is acquired (Step 2), it transmits to the user side (Step 3), and information is acquired and (Step 4) accumulated in the user side from a system (Step 5).
0010 The 2nd invention detects what overlaps among request conditions from two or more users to a system, and optimizes processing. In a system, information which accessed sources of information periodically and was acquired saves the 3rd invention, only when updated. The 4th invention eliminates information acquired from sources of information in a stage whose referring to agency was lost.
0011 When the 5th invention transmits information acquired from sources of information, it detects an infinite loop. Drawing 2 is a principle lineblock diagram of this invention. The 6th invention is a substitute information acquisition system for accessing an information providing device which has the sources of information periodically updated by request from a user, and acquiring, Instead of carrying out direct access to the information providing device 300 which carries out renewal of data periodically via a network from a user, The user terminal 100 which requests periodical access from the information providing device 300 which exists on this network, and accumulates acquired information in it, The accessing means 203 which accesses the information providing device 300 periodically based on a request from the user terminal 100, It has the substitute information acquisition system 200 which has the information acquisition means 202 which acquires information corresponding to this request from the information providing device 300, and the transfer means 201 which transmits information acquired by this information acquisition means 202 to this user terminal.
0012 The above-mentioned substitute information acquisition system 200 detects what overlaps among request conditions from two or more user terminals 100, and the 7th invention includes the duplication condition detecting means 222 which optimizes processing. The 8th invention includes the updating judging means 221 saved at the memory measure 220, only when information which the above-mentioned substitute information acquisition system 200 accessed an information providing device periodically, and acquired is updated.
0013 The 9th invention includes the information deleting means 204 which eliminates information accumulated in the memory measure 220 in a stage whose referring to agency was lost in information which the substitute information acquisition system 200 acquired from the information providing device 300. The 10th invention contains an infinite loop detection means 212 to detect an infinite loop by execution of a transfer command, when the transfer means acquisition device 200 transmits information acquired from the information providing device 300 to the user terminal 100.
0014 The 11th invention is provided with the following.
It is the storage which stored a substitute information acquisition program for a user to access sources of information updated periodically, and acquire, An access request process of requesting access periodical to a system which exists on this network instead of carrying out direct access to sources of information which carry out renewal of data periodically via a network from a user.
A substitute access process of accessing sources of information instead of a user based on a request by an access request process.
A transmitting information process which makes information acquired by a substitute access process transmit to the user side.
An accumulation process in which information acquired by a transmitting information process is stored up.

0015 The 12th invention detects what overlaps among request conditions from two or more users to a system, and includes an optimization process which optimizes processing. The 13th invention includes an updating judging process made to save only when information which accessed sources of information periodically and was acquired is updated. The 14th invention includes an information elimination process of eliminating information acquired from sources of information in a stage whose referring to agency was lost.
0016 When the 15th invention transmits information acquired from sources of information, it

includes an infinite loop detection process of detecting an infinite loop. As mentioned above, the 1st, 6th, and 11th inventions arrange a substitute information acquisition system on a network, and a user hands conditions for acquiring information to this system, in the system concerned, he acquires information based on given conditions, and stores in an information storing region a result obtained by this.

0017 The 2nd, 7th, and 12th inventions by having a table which manages an information acquisition condition given to a system from a user, It becomes possible by managing a client, an access point, and an access cycle, avoiding duplication of access to the same sources of information, and carrying out scheduling so that access may become the optimal to aim at control of load of a network and sources of information.

0018 If information acquired by this access is compared with information acquired last time and the contents are updated, the 3rd, 8th, and 13th inventions will store information acquired this time, will store information which indicated not having updated information when that is not right, and will notify a user of it. This becomes possible to aim at mitigation of accumulation information. The 4th, 9th, and 14th inventions give a name uniquely discriminable in a share storing region of acquisition information, and store information. While data which can identify existence of reference to common informations in a share storing region stored is investigated and a referring to agency exists, shared data is held, and when a referring to agency is lost, these common informations are deleted. A counter which adds common informations stored in a shared area for every increase in a referring to agency is stored in the above-mentioned object table, and the number of references of common informations is managed. On the contrary, a record of applicable common informations and a management table is deleted noting that reference origin which refers to these common informations is lost, when a referring to agency ends reference, the number of references is subtracted and the number of references is set to "0." In this invention, the above-mentioned conventional problem is solved by managing information on whether a referencing person exists to common informations.

0019 When transmission information is in acquired information, the 5th, 9th, and 14th inventions, Since a loop is constituted when this transmission information is memorized, this new transmission information is compared with a followed address when new transmission information is further included in information which followed and acquired the destination, and there is a match, Processing is interrupted here, information which described this purport is stored, and it becomes possible to notify a user.

0020

Embodiment of the Invention Drawing 3 is a key map of the common-informations managerial system with which this invention is applied. If the system shown in the figure accesses the substitute information acquisition system on a network from each user terminal, a substitute information acquisition system will acquire information from an information providing device. In the composition concerned, a substitute information acquisition system acquires the information on the information providing device updated periodically, and returns it to a user terminal with a demand.

0021 Drawing 4 shows the composition of the common-informations managerial system with which this invention is applied. The system shown in the figure comprises the user-terminal device 100, the substitute information acquisition system 200, and the information providing device 300. It is connected with the substitute information acquisition system 200 via the network interface 103 and the network 400, and the user-terminal device 100 comprises the input part 101 and the indicator 102.

0022 The substitute information acquisition system 200 is connected with the user terminal 100 and the information providing device 300 via the network interface 201 and the network 400, It comprises the information acquisition section 202, the access schedule table 211, the loop primary detecting element 212, the personal information storing region 205, the cache table 213, and the common-informations management table 206 that manages the common-informations storing region 207 and its information.

0023 It is connected with the substitute information acquisition system 200 via the network interface 301 and the network 400, and the information providing device 300 has the provided information storing region 302.

0024

ExampleHereafter, the example of this invention is described with a drawing. In the following explanation, as the indicator 102 of the user-terminal device 100, a WWW browser, As the network interfaces 103 and 203, an HTTP client, The case where it is considered as the HTML document which included the reference to objects, such as a picture, as information which the

information providing device 300 provides with an HTTP server as the network interfaces 201 and 301, and provides with URL of sources of information as a search key of the common-informations management table 206 is explained.

0025 Drawing 5 is a flow chart for explaining the information acquisition method of one example of this invention.

Drawing 6 is an example of the request data from the user of one example of this invention, and drawing 7 is an example of the access schedule table of one example of this invention.

Step 101 First, a user inputs URL of the needed information, access time of onset, and an access cycle using the input part 101, and does additional registration of these information to the access schedule table 211. The access schedule table 211 receives the demand from a user in form like drawing 6, and changes and stores it in form as shown in drawing 7 which sorted this the access point and the access cycle here.

0026 Step 102 The information acquisition section 202 accesses each registered URL periodically with reference to the access schedule table 211.

Step 103 It judges, when contained, it shifts to Step 104, and when it is not included whether transmission information is included in the information accessed and acquired, it shifts to Step 107. .

0027 Step 104. When transmission information is included, the destination is reaccessed according to the transmission information concerned, but transmission information is further included in the information on the destination at this time.

When the destination shows the original address, it serves as an infinite loop.

In order to avoid such a phenomenon, when transmission information is included, the address of the source is memorized in the loop primary detecting element 212.

0028 Step 105 It checks whether it is in agreement with the address which the address of the destination has followed, when in agreement, it shifts to Step 106, in being inharmonious, it shifts to Step 102, and the destination is accessed.

Step 106 Since it should be a loop when in agreement, the loop primary detecting element 212 stores in a user's personal information storing region 205 the information which indicated that. Two or more source information is memorized in consideration of the case where it is transmitted continuously, and it compares source information.

0029 Step 107 After accessing the target access point and acquiring information, this information is compared with the information which each user remembered in the cache table 213 acquired immediately before, and it is checked whether information is updated or not.

Step 108 When not updated, the information which indicated that is stored in a user's personal information storing region 205.

0030 Step 109 When updated with the cache table, the acquired information is stored in the personal information storing region 205, but the details are later mentioned along with drawing 8. After information storing will be accessed if access time comes based on an access schedule table again (it shifts to Step 102). Drawing 8 is a flow chart which shows the operation at the time of the HTML document addition to the personal information storing region of one example of this invention.

0031 Step 201 The information acquisition section 202 analyzes the acquired HTML document, and investigates all the reference objects by which an inline substitution is carried out.

Step 202 Only the number of the reference objects of the result investigated at Step 201 repeats the following operations. First, the substance of a reference object is acquired from the information providing device 300 by the information acquisition section 202.

0032 The common-informations management table 206 as used Step 203, next URL of this reference object as a key, for example, shown in drawing 9 is searched, and it is checked whether this object is already registered. When registered, it shifts to Step 204, and when that is not right, it shifts to Step 207.

Step 204 When the applicable object is registered, the object is taken out from the common-informations storing region 207.

0033 Step 205 Collation of the object and data which were acquired at Step 202 is performed, in being the same, it shifts to Step 206, and in differing, it shifts to Step 207.

Step 206 What is necessary is just to refer to the acquired object and the object which has HTML in the common-informations storing region 207 if data is the same, and it is not necessary to store the newly acquired object. In order to record that HTML which refers to this object increased, 1 is added to the item of the number of references of the record about this object of the common-informations management table 206.

0034 Step 207 On the other hand, the HTML document side is also rewritten so that the object stored in the common-informations storing region 207 in the reference information of the object may be referred to. The case where the data of an object is not the same in collation of Step 205, When the object is not registered into the common-informations storing region 207 in the check of Step 203, it is necessary to register into the common-informations storing region 207 the new object acquired by Step 202. In this case, a new shared file name is given to the acquired object, and it stores in the common-informations storing region 207.
0035 Step 208 The new record for this object is further created to the common-informations management table 206.
Step 209 It rewrites so that the object which newly stored the reference information of the object after processing of these and by the side of an HTML document in the common-informations storing region 207 may be referred to.
0036 When processing of step 210 reference object is completed, it shifts to Step 211, and in not ending, it shifts to Step 202 and only the number of objects with which this HTML document is referring to these processings is repeated.
Step 211 The HTML document containing the above-mentioned HTML which finally rewrote reference information is generated, this is stored in the personal information storing region 205, and processing is ended.
0037 Next, the case where a user wants to delete the HTML document stored in the personal information storing region 205 is explained below. Drawing 10 is a flow chart in the case of deleting the information on the personal information storing region of one example of this invention. A user inputs URL of an HTML document to delete using the input part 101, and requests deletion of information from the information cutout 204 of the substitute information acquisition system 200. Thereby, the substitute information acquisition system 200 performs the following operations.
0038 Step 301 The information cutout 204 receives URL transmitted by the user.
Step 302 The HTML document shown by this URL is taken out from the individual storing region 205.
Step 303 A reference destination extracts the thing in the common-informations storing region 207 among the reference information contained in this HTML document.
0039 Step 304 1 is subtracted from the number of references of each applicable record in the common-informations management table 206 in order to show that one reference to the object of these decreased.
Step 305 When the number of references of the common-informations management table 206 is set to 0 at this time, it shifts to Step 306, and when that is not right, it shifts to Step 307.
0040 Step 306 When the number of references is set to 0, it considers that all the reference origin to this object was lost, and the record about this object in the substance of the object stored in the common-informations storing region 207 and the common-informations management table 206 is deleted.
When processing of step 307 reference object is completed, it shifts to Step 308 and, in not ending, shifts at Step 303.
0041 The HTML document from which the deletion stored in the personal information storing region 205 was requested is deleted after that **step 308** .
Although the above-mentioned example explained based on the composition shown in drawing 4, The function of the information acquisition section 202 in the substitute information acquisition system 200, the loop primary detecting element 212, and information cutout 204 grade is built as a program, It becomes possible to realize this invention easily by storing in portable storages connected to the substitute information acquisition system 200 concerned, such as a disk unit, a floppy disk, and CD-ROM, and installing at the time of execution of this system.
0042 Change and application are variously possible for this invention within a claim, without being limited to the above-mentioned example.
0043
Effect of the Invention As mentioned above, acquisition of the information updated periodically is requested from the system which exists on a network in this invention. Therefore, it not only can hold down various costs which a user should undertake, but it can contribute to control of the access load with which sources of information are covered.

0044 An information storing region can be saved by sharing the object which overlaps in a substitute information acquisition system. By managing the number of references of a common

object, it is also possible to hold the timing which eliminates the object which became unnecessary, and management of the always optimal information storing region is possible.

Field of the Invention This invention relates to the storage which stored the substitute information acquisition method, the system, and the substitute information acquisition program, It is related with the storage which stored the substitute information acquisition method for a user to make the work which accesses the information updated periodically and acquires information do on the substitute system on a network instead of a user especially, the system, and the substitute information acquisition program.

Description of the Prior Art Drawing 11 shows the gestalt which accesses an information providing device via a network for every conventional user. Thereby, the composition shown in the figure acquires the information updated in the information providing device by accessing an information providing device directly via a network for every user terminal.
0003(1) According to a renewal period, the user accessed the information providing device and acquires the information updated periodically from the terminal. These days, if access time and a cycle are beforehand set to the access point, the terminal software accessed automatically is also sold.
(2) In the network which is installing the fire wall, the cache function of a proxy server is used and improvement in the access speed of information acquisition and mitigation of the access load of sources of information are aimed at.

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Step 103 It judges, when contained, it shifts to Step 104, and when it is not included whether

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0027 Step 104. When transmission information is included, the destination is reaccessed according to the transmission information concerned, but transmission information is further included in the information on the destination at this time.
When the destination shows the original address, it serves as an infinite loop.
In order to avoid such a phenomenon, when transmission information is included, the address of the source is memorized in the loop primary detecting element 212.

0028 Step 105 It checks whether it is in agreement with the address which the address of the destination has followed, when in agreement, it shifts to Step 106, in being inharmonious, it shifts to Step 102, and the destination is accessed.
Step 106 Since it should be a loop when in agreement, the loop primary detecting element 212 stores in a user's personal information storing region 205 the information which indicated that. Two or more source information is memorized in consideration of the case where it is transmitted continuously, and it compares source information.

0029 Step 107 After accessing the target access point and acquiring information, this information is compared with the information which each user remembered in the cache table 213 acquired immediately before, and it is checked whether information is updated or not.
Step 108 When not updated, the information which indicated that is stored in a user's personal information storing region 205.

0030 Step 109 When updated with the cache table, the acquired information is stored in the personal information storing region 205, but the details are later mentioned along with drawing 8. After information storing will be accessed if access time comes based on an access schedule table again (it shifts to Step 102). Drawing 8 is a flow chart which shows the operation at the time of the HTML document addition to the personal information storing region of one example of this invention.

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Step 204 When the applicable object is registered, the object is taken out from the common-informations storing region 207.

0033 Step 205 Collation of the object and data which were acquired at Step 202 is performed, in being the same, it shifts to Step 206, and in differing, it shifts to Step 207.
Step 206 What is necessary is just to refer to the acquired object and the object which has HTML in the common-informations storing region 207 if data is the same, and it is not necessary to store the newly acquired object. In order to record that HTML which refers to this object increased, 1 is added to the item of the number of references of the record about this object of the common-informations management table 206.

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0035 Step 208 The new record for this object is further created to the common-informations management table 206.
Step 209 It rewrites so that the object which newly stored the reference information of the object after processing of these and by the side of an HTML document in the common-informations storing region 207 may be referred to.

0036 When processing of step 210 reference object is completed, it shifts to Step 211, and in not ending, it shifts to Step 202 and only the number of objects with which this HTML document is referring to these processings is repeated.
Step 211 The HTML document containing the above-mentioned HTML which finally rewrote

reference information is generated, this is stored in the personal information storing region 205, and processing is ended.
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Step 303 A reference destination extracts the thing in the common-informations storing region 207 among the reference information contained in this HTML document.
0039 Step 304 1 is subtracted from the number of references of each applicable record in the common-informations management table 206 in order to show that one reference to the object of these decreased.
Step 305 When the number of references of the common-informations management table 206 is set to 0 at this time, it shifts to Step 306, and when that is not right, it shifts to Step 307.
0040 Step 306 When the number of references is set to 0, it considers that all the reference origin to this object was lost, and the record about this object in the substance of the object stored in the common-informations storing region 207 and the common-informations management table 206 is deleted.
When processing of step 307 reference object is completed, it shifts to Step 308 and, in not ending, shifts at Step 303.
0041 The HTML document from which the deletion stored in the personal information storing region 205 was requested is deleted after that **step 308** .
Although the above-mentioned example explained based on the composition shown in drawing 4, The function of the information acquisition section 202 in the substitute information acquisition system 200, the loop primary detecting element 212, and information cutout 204 grade is built as a program, It becomes possible to realize this invention easily by storing in portable storages connected to the substitute information acquisition system 200 concerned, such as a disk unit, a floppy disk, and CD-ROM, and installing at the time of execution of this system.
0042 Change and application are variously possible for this invention within a claim, without being limited to the above-mentioned example.

Problem(s) to be Solved by the Invention However, under the present circumstances in the method of (1) of the above-mentioned former, access to sources of information is performed in most cases for every user. Therefore, though natural when a user is going to acquire manually the information on the sources of information updated periodically from a terminal, a terminal and a network must always be worked, it must double with the cycle of renewal of information, and information must be supervised. In order to reduce the trouble of information surveillance, these days, the software which accesses the set-up sources of information automatically is also developed, but even in this case, a terminal is always worked, and in order to have to change into the state where the network was connected, such costs start too.
0005 The situation of accessing for every user also from the position of sources of information brings very high access load to sources of information with high access frequency. Therefore, acquiring information increasingly takes time, and there is the user side, also when it becomes impossible for network cost not only to to cost dearly, but to acquire information. The cache function of a proxy server accumulates temporarily the information accessed to the last, when exceeding a certain constant rate, it has only a function eliminated from the old thing, and it has not gone by the method of (2) of the above-mentioned former to management of each information. Since the information on sources of information does not perform the cache function of a general proxy server to the check of updating / renewal of un-, the information accumulated in cash may already be old. Therefore, since the user cannot trust information collected on cash, cash must be cleared, a command which accesses sources of information again must be sent from a terminal, and each user will do direct access to sources of

information after all. Thus, there are few effects of cash to the sources of information updated frequently.

0006 As for common informations, originally, although cash is a temporary share function, it is not desirable to delete, as long as there is a user who needs the information. It may happen to eliminate, although the user who needs information still needs the cache function of a proxy server since it has not managed each accumulation information as mentioned above.

0007 As a result of accessing sources of information, there are some transmission information (for example, <METAHTTP-EQUIV="REFRESH" CONTENT="0 in HTML, URL= destination URL", etc.) is indicated to be to the information. In the WWW browser of these days, when the information the destination is indicated to be is acquired, an access point is promptly changed into the address of the destination, and it has specification which acquires information, but transmission information is further shown in the information on the destination, and the destination may show the source. In such a case, the loop of transmission will be constituted and it will continue accessing by turns forever. When having accessed manually from the WWW browser, even if such a phenomenon occurs, access can be stopped intentionally and a loop can be cut, but in carrying out automatic access, it will become a problem if a system has a detection function of such a loop.

0008 This invention was made in view of the above-mentioned point, and can press down various costs which a user should undertake, and an object of this invention is to provide the storage which stored the substitute information acquisition method which can control the access load with which sources of information are covered, the system, and the substitute information acquisition program.

Means for Solving the Problem Drawing 1 is a figure for explaining a principle of this invention. In a substitute information acquisition method for the 1st invention to access sources of information updated periodically, and for a user acquire it, Request access periodical to a system which exists on this network instead of a user doing direct access to sources of information which carry out renewal of data periodically via a network (Step 1), and a system accesses sources of information periodically, Information is acquired (Step 2), it transmits to the user side (Step 3), and information is acquired and (Step 4) accumulated in the user side from a system (Step 5).

0010 The 2nd invention detects what overlaps among request conditions from two or more users to a system, and optimizes processing. In a system, information which accessed sources of information periodically and was acquired saves the 3rd invention, only when updated. The 4th invention eliminates information acquired from sources of information in a stage whose referring to agency was lost.

0011 When the 5th invention transmits information acquired from sources of information, it detects an infinite loop. Drawing 2 is a principle lineblock diagram of this invention. The 6th invention is a substitute information acquisition system for accessing an information providing device which has the sources of information periodically updated by request from a user, and acquiring, Instead of carrying out direct access to the information providing device 300 which carries out renewal of data periodically via a network from a user, The user terminal 100 which requests periodical access from the information providing device 300 which exists on this network, and accumulates acquired information in it, The accessing means 203 which accesses the information providing device 300 periodically based on a request from the user terminal 100, It has the substitute information acquisition system 200 which has the information acquisition means 202 which acquires information corresponding to this request from the information providing device 300, and the transfer means 201 which transmits information acquired by this information acquisition means 202 to this user terminal.

0012 The above-mentioned substitute information acquisition system 200 detects what overlaps among request conditions from two or more user terminals 100, and the 7th invention includes the duplication condition detecting means 222 which optimizes processing. The 8th invention includes the updating judging means 221 saved at the memory measure 220, only when information which the above-mentioned substitute information acquisition system 200 accessed an information providing device periodically, and acquired is updated.

0013 The 9th invention includes the information deleting means 204 which eliminates information accumulated in the memory measure 220 in a stage whose referring to agency was lost in information which the substitute information acquisition system 200 acquired from the

information providing device 300. The 10th invention contains an infinite loop detection means 212 to detect an infinite loop by execution of a transfer command, when the transfer means acquisition device 200 transmits information acquired from the information providing device 300 to the user terminal 100.

0014 The 11th invention is provided with the following.

It is the storage which stored a substitute information acquisition program for a user to access sources of information updated periodically, and acquire, An access request process of requesting access periodical to a system which exists on this network instead of carrying out direct access to sources of information which carry out renewal of data periodically via a network from a user.

A substitute access process of accessing sources of information instead of a user based on a request by an access request process.

A transmitting information process which makes information acquired by a substitute access process transmit to the user side.

An accumulation process in which information acquired by a transmitting information process is stored up.

0015 The 12th invention detects what overlaps among request conditions from two or more users to a system, and includes an optimization process which optimizes processing. The 13th invention includes an updating judging process made to save only when information which accessed sources of information periodically and was acquired is updated. The 14th invention includes an information elimination process of eliminating information acquired from sources of information in a stage whose referring to agency was lost.

0016 When the 15th invention transmits information acquired from sources of information, it includes an infinite loop detection process of detecting an infinite loop. As mentioned above, the 1st, 6th, and 11th inventions arrange a substitute information acquisition system on a network, and a user hands conditions for acquiring information to this system, in the system concerned, he acquires information based on given conditions, and stores in an information storing region a result obtained by this.

0017 The 2nd, 7th, and 12th inventions by having a table which manages an information acquisition condition given to a system from a user, It becomes possible by managing a client, an access point, and an access cycle, avoiding duplication of access to the same sources of information, and carrying out scheduling so that access may become the optimal to aim at control of load of a network and sources of information.

0018 If information acquired by this access is compared with information acquired last time and the contents are updated, the 3rd, 8th, and 13th inventions will store information acquired this time, will store information which indicated not having updated information when that is not right, and will notify a user of it. This becomes possible to aim at mitigation of accumulation information. The 4th, 9th, and 14th inventions give a name uniquely discriminable in a share storing region of acquisition information, and store information. While data which can identify existence of reference to common informations in a share storing region stored is investigated and a referring to agency exists, shared data is held, and when a referring to agency is lost, these common informations are deleted. A counter which adds common informations stored in a shared area for every increase in a referring to agency is stored in the above-mentioned object table, and the number of references of common informations is managed. On the contrary, a record of applicable common informations and a management table is deleted noting that reference origin which refers to these common informations is lost, when a referring to agency ends reference, the number of references is subtracted and the number of references is set to "0." In this invention, the above-mentioned conventional problem is solved by managing information on whether a referencing person exists to common informations.

0019 When transmission information is in acquired information, the 5th, 9th, and 14th inventions, Since a loop is constituted when this transmission information is memorized, this new transmission information is compared with a followed address when new transmission information is further included in information which followed and acquired the destination, and there is a match, Processing is interrupted here, information which described this purport is stored, and it becomes possible to notify a user.

0020

Embodiment of the Invention Drawing 3 is a key map of the common-informations managerial system with which this invention is applied. If the system shown in the figure accesses the substitute information acquisition system on a network from each user terminal, a

substitute information acquisition system will acquire information from an information providing device. In the composition concerned, a substitute information acquisition system acquires the information on the information providing device updated periodically, and returns it to a user terminal with a demand.

0021 Drawing 4 shows the composition of the common-informations managerial system with which this invention is applied. The system shown in the figure comprises the user-terminal device 100, the substitute information acquisition system 200, and the information providing device 300. It is connected with the substitute information acquisition system 200 via the network interface 103 and the network 400, and the user-terminal device 100 comprises the input part 101 and the indicator 102.

0022 The substitute information acquisition system 200 is connected with the user terminal 100 and the information providing device 300 via the network interface 201 and the network 400, It comprises the information acquisition section 202, the access schedule table 211, the loop primary detecting element 212, the personal information storing region 205, the cache table 213, and the common-informations management table 206 that manages the common-informations storing region 207 and its information.

0023 It is connected with the substitute information acquisition system 200 via the network interface 301 and the network 400, and the information providing device 300 has the provided information storing region 302.

Brief Description of the Drawings

Drawing 1 It is a figure for explaining the principle of this invention.

Drawing 2 It is a principle lineblock diagram of this invention.

Drawing 3 It is a key map of the common-informations managerial system with which this invention is applied.

Drawing 4 It is a lineblock diagram of the common-informations managerial system with which this invention is applied.

Drawing 5 It is a flow chart for explaining the information acquisition method of one example of this invention.

Drawing 6 It is an example of the request data from the user of one example of this invention.

Drawing 7 It is an example of the access schedule table of one example of this invention.

Drawing 8 It is a flow chart which shows the operation at the time of the HTML document addition to the personal information storing region of one example of this invention.

Drawing 9 It is an example of the information management table of one example of this invention.

Drawing 10 It is a flow chart in the case of deleting the information on the personal information storing region of one example of this invention.

Drawing 11 It is a figure showing the gestalt which accesses an information providing device via a network for every conventional user.

Description of Notations

100 User-terminal device
101 Input part
102 Indicator
103 Network interface
200 Substitute information acquisition system
201 A network interface, a transfer means
202 An information acquisition section, an information acquisition means
203 A network interface, an accessing means
204 An information cutout, an information deleting means
205 Personal information storing region
206 Common-informations management table
207 Common-informations storing region
211 Access schedule table
212 A loop primary detecting element, an infinite loop detection means
213 Cache table
220 Memory measure
221 Updating judging means
222 Duplication condition detecting means

300 Information providing device
301 Network interface
302 Provided information storing region
400 Network

Drawing 1

For drawings please refer to the original document.

Drawing 2

For drawings please refer to the original document.

Drawing 6

For drawings please refer to the original document.

Drawing 3

For drawings please refer to the original document.

Drawing 7

For drawings please refer to the original document.

Drawing 9

For drawings please refer to the original document.

Drawing 11

For drawings please refer to the original document.

Drawing 4

For drawings please refer to the original document.

Drawing 5

For drawings please refer to the original document.

Drawing 8

For drawings please refer to the original document.

Drawing 10

For drawings please refer to the original document.

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